Net Metering

Net metering is a policy in which a utility must purchase power generated by its customer at the same retail price it sells electricity to the customer. It is typically used as an incentive for customers who install renewable energy systems, such as wind turbines. Net metering was first considered as a result of the Public Utility Regulatory Policies Act of 1978. South Dakota's policymakers debated it and chose not to implement net metering at that time. The South Dakota Legislature has considered this issue a number of times and concluded mandatory net metering is not in the public interest.

The reason net metering has not been adopted is the utility would be forced to pay the generator far above the market cost of generation. Further, the utility would not be able to schedule the generation of the electricity and it would be worth even less than the electricity they are already buying for a lower price.

Retail electricity rates are based on the cost of generation as well as the cost of distribution and transmission facilities. Thus, if utilities must pay above market rates for substandard power, rates will eventually have to go up to cover their increased expenses. The increased rates will have the largest effect on low income customers, who would not be able to afford the large upfront costs of renewable energy systems in the first place.

Small generators do have an opportunity to sell power to their utility without net metering. The purchase price the utility pays must reflect the value of the generation and is regulated by the Federal Energy Regulatory Commission. It does not include the costs of transmission, distribution, overhead and other costs of providing electrical service that are included in net-metered rates. All electric utilities regulated by the PUC are obligated to interconnect with and purchase power from small wind facilities if the generator desires and agrees to the terms.

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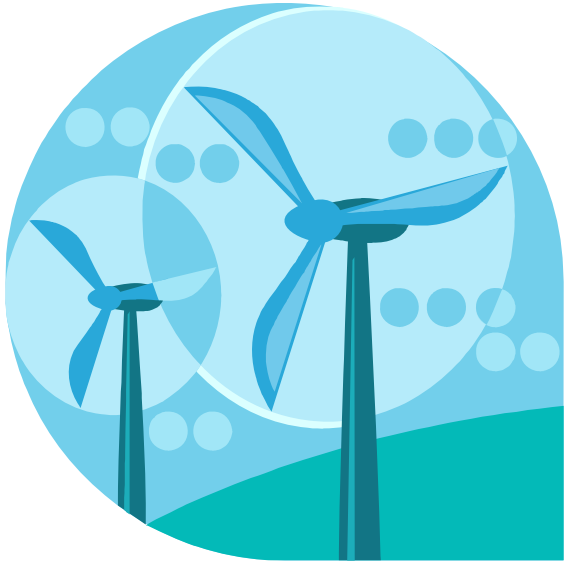
SouthDakota

Wind Energy



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Wind energy is fast becoming an area of interest in South Dakota. The South Dakota Public Utilities Commission has produced this booklet to help you become more informed about wind energy and what it means to our state's economy, environment and energy mix.

The PUC's role in wind energy development is regulation and education. The PUC has siting authority for wind farms with a capacity of 100 megawatts or more. Smaller wind projects are not regulated by the commission. The PUC provides information on its Web sites, www.PUC.SD.gov and www.SDWind.com, and through other sources to help South Dakotans understand the opportunities and obstacles regarding wind energy use and development. It is necessary to have accurate information to make responsible and wise economic and environmental decisions.

The Resource

Most studies rank South Dakota among the top five states for wind energy potential. An often-cited 1991 study estimated our state as having the fourth best wind resource in the country. The study ranked the top 10 states in order of potential as North Dakota, Texas, Kansas, South Dakota, Montana, Nebraska, Wyoming, Oklahoma, Minnesota and Iowa. A wind resource map at www.SDWind.com shows how the wind is classified throughout South Dakota.

South Dakota's Wind Resource Assessment Network, a series of instrument stations across South Dakota, is a tool for analyzing wind. The WRAN collects data about wind speed and variability at sites near Belle Fourche, Faith, Martin, Murdo, Gettysburg, Fort Thompson, Medicine Butte, Leola, Crow Lake, Crandall and Summit. Researchers from South Dakota State University analyze the information to predict maximum capacity factors for potential wind turbines. This information is especially valuable to researchers, residents and developers interested in selecting sites for wind energy facilities.

Neighboring States

South Dakotans often ask why our state does not develop wind energy at the same pace as other states. Folks may see wind farms next door in Minnesota or hear news reports of California's rebate programs for renewable energy systems. When making comparisons to other states, an important consideration is the differences between South Dakota and its counterparts. For example, both Minnesota and California have larger populations, more energy use and new energy needs, and more state government-collected taxes and funds than South Dakota. The population and growth drives the demand for new energy in those states and the taxes fund incentives to companies and individuals with renewable energy systems.

Small Wind Systems

South Dakotans who want to install a small wind system to provide power to their home or other facility should consider these points:

Need – Determine the practicality of having a wind system. It may be worth investigating if your property has a good wind resource, is located on at least one acre of land, if your local zoning codes or covenants allow wind turbines, if your average electricity bills are $150 per month or more, and if you are comfortable with long-term investments.

Cost – A residential turbine costs about $3,000 - $5,000 for every kilowatt of generating capacity, according to the American Wind Energy Association. AWEA estimates that a typical home wind system costs $40,000 (10kW) to build. Other factors affecting cost are maintenance, connection and payments to a utility provider for when the wind doesn't blow, insurance, etc. AWEA advises that after 10 years, blades or bearings may need to be replaced, but with proper care, a machine should last up to 20 years.

Incentives

Federal and state governments have created several incentives that favor wind development.

Federal Incentive

- The Federal Production Tax Credit, enacted in 1994, provides a 1.8 cent per kilowatt credit, adjusted periodically for inflation, for electricity produced from a wind farm during the first 10 years of operation. For example, if a potential wind energy project can produce electricity at 6.5 cents per kilowatt before the PTC, the PTC of 1.8 cents reduces the cost to 4.7 cents – which is about a 30 percent reduction. The PTC is set to expire at the end of 2008 unless Congress takes action to extend it. The South Dakota Governor's Energy Task Force, which includes PUC representation, has endorsed making the PTC permanent.

State Incentives

- In 2003, legislation was passed to give a break by not including wind turbines or blades in property taxes, thereby reducing the property tax burden by 70 percent.
- The PUC was successful with legislation passed in 2005 which simplified and expedited the process to approve wind farm sites. Siting a traditional energy conversion facility can take up to 18 months, and the process was shortened to six months for wind farms.
- Legislation passed in 2006, introduced by the PUC, established the Midwest Renewable Energy Tracking System, to track the trade/sale of renewable energy credits.
- Other legislation passed in 2006 encourages the construction and upgrade of transmission lines to gather wind power by allowing utilities to recover their construction costs as lines are being constructed or improved, rather than after the next rate case.
- Property tax incentives for the building of transmission lines and infrastructure were approved during the 2008 legislative session. The incentives allow developers to receive rebates which they could apply toward half of the cost of new transmission systems.

South Dakota Wind Projects

South Dakota has several operating wind farms.

- The **Highmore Wind Energy Project** in Hyde County has 27 turbines that can produce 40.5 megawatts (MW) of energy. It is South Dakota's first major wind farm, beginning operation in 2003. It is owned by FPL Energy and the power is sold to Basin Electric Power Cooperative.
- The **MinnDakota Wind Farm** in Brookings County began operating its 36 turbines in 2007. The farm can produce 54 MW of electricity. Iberdrola Renewables owns the wind farm and sells the electricity to Xcel Energy.
- The **Tatanka Wind Farm** in McPherson County is the state's largest wind farm. Its 60 turbines began producing electricity in March 2008. It has a generating capacity of 88 MW. The project was developed by Acciona Energy and the power is sold into the Midwest ISO power market.

Smaller projects are located around Chamberlain, Howard, Gary, Canova, Carthage, Oaklane Colony and Rosebud. All together, South Dakota has nearly 200 megawatts of wind energy installed. The American Wind Energy Association ranks South Dakota 17th in the nation for installed wind energy capacity.

Other wind projects are currently under development.

- The **Wessington Springs Wind Project** is under construction in Jerauld County and is scheduled to be operating by the end of 2008. Developed by Babcock & Brown, the expected 51 MW of electricity produced by 34 turbines will be purchased by the Heartland Consumers Power District, which is headquartered in Madison, S.D.
- Other counties that are most often mentioned as sites for new or expanded wind projects include Hand/Hyde (expansion), Todd (Rosebud expansion), Shannon, Turkey Ridge in Hutchinson/Turner, Haakon/Stanley, Lyman, Roberts, Gregory, Charles Mix, Codington, Walworth, Jerauld/Buffalo; and areas around Ree Heights, Miller, Freeman, and Fox Ridge near Faith, as well as some tribal-land projects.

Wind Energy Benefits

Sustainable – Though supplies of resources like natural gas and uranium are finite, as far as we know, the wind will always blow.

Environmentally-friendly – Wind power does not emit carbon dioxide, sulfur dioxide, nitrous oxides or mercury.

Economic – Although wind projects do not create many jobs, wind-related businesses, such as turbine manufacturers and maintenance companies, often can and are more likely to be located in areas with significant existing or possible wind development.

Wind Energy Weaknesses

Cost – Many of the utilities in our region, particularly rural electrics and municipal providers, have low-cost power, primarily generated from a combination of coal and hydropower, in their portfolio. Wind power is often more expensive. However, wind power is often considered cost competitive with existing natural gas generation and new coal or nuclear.

Intermittency – Almost nothing is more important in the electric industry than reliability. When we flip the switch, we want the lights to come on. Unfortunately, it is difficult to predict how hard the wind will blow at a given time a week, day, or even hour from now. This creates some integration and reliability challenges for load-serving entities.

Generation profile vs. load needs – The wind often blows the most when we least need the electricity. The highest wind speeds are usually recorded in the nighttime and early morning, when energy needs are relatively low. In July, August and September, when electricity is most needed to cool our homes and businesses, the wind blows less than it does other times.

Lack of (cost-effective) storage mechanism – Electricity must be used when it is produced. No cost-effective large-scale storage or battery technology currently exists, although research is being conducted.

Successful Development

A successful wind farm needs three basic ingredients:

1. **An excellent wind resource** – South Dakota's wind resource ranks from fair to excellent, depending upon the area.

2. **Transmission** – Capacity on high voltage lines is needed to get the energy to the end user.

3. **A buyer for the electricity** – Wind farm developers typically do not deliver the electricity to consumers. Electric utility companies buy the electricity from the developer. It is preferred the wind farm have a signed, long-term contract with a buyer before making an investment in a wind project.

Transmission

Transmission is a key element of a successful wind project. It is also one of the biggest obstacles. The current transmission system in South Dakota is mostly full. The utility companies that own the lines are using the capacity to transmit electricity that's already being produced to customers. The leftover capacity is limited. Further, that leftover capacity fluctuates depending on energy use. During times of extreme heat or cold, the capacity of the lines may be in complete use. Considering wind energy is not produced at a constant level – it fluctuates based on when and how hard the wind blows – that leftover transmission capacity may not be adequate to carry newly-produced wind energy.

Major transmission lines are generally estimated to cost about $1 million per mile to construct. That's a huge investment for a wind developer. South Dakota is far away from large energy-use markets like Minneapolis, Chicago and Denver so the distance and cost to export wind energy is great.

The good news is the PUC has approved three new major transmission line projects in eastern South Dakota, each with the stated purpose of assisting the development of wind power.